diverticula of the annular stomach; *e*, annular stomach; *S*, suctorial organ; *m*, nerves of the fourth pair of ambulatory legs; *n*, abdominal nerve.

Fig. 2. Diagram of the left part of the cephalothorax of *Mygale cœmentaria*, Latr., to show the horizontal projection of the coxal gland; ×6½. *a*, The coxal gland. 1, Cheliferæ. 2, Chelæ. 3–6, The four last pairs of cephalothoracic appendages. A. Abdomen.

3. The same specimen as in fig. 4. To the left hand the upper prolongations (*p*) of the entosternite show only the coxal lobes (*a*) of the gland; on the right, the same prolongations and the lateral diverticula (*d*) of the annular stomach hide all but very small parts (*a*) of the gland. *S*. Suctorial organ.

4. The left coxal gland and the entosternite of *Mygale*, sp., from South America, *in situ*, dorsal view; ×2½. The superior prolongations of the entosternite have been removed along the line *ii*, to show, on the right side, the coxal gland in its entirety, and on the right side the lower plate of the entosternite, which on the left is hidden by the gland. *a*, The coxal gland; *b*, its coxal lobes; *e*, its internal projections. *E*, The entosternite. 3–6, The coxæ of the ambulatory legs. *A.B*, Line showing the direction of the section in fig. 1.

2. On the Myology of the Water-Opossum. By E. J. Sidebotham, B.A., late Assistant Demonstrator of Anatomy, Cambridge.

[Received November 20, 1884.]

Through the great kindness of Professor Macalister I have had the opportunity of making a careful dissection of the muscular system of the Water-Opossum (*Chironectes variegatus*).

The specimen, which was that of a young male, was a spirit one, and the muscles were in a very good state of preservation.

When I received it the skin and abdominal viscera had been removed, some of the superficial muscles were considerably damaged, and most of the terminal phalanges had disappeared.

It had the following dimensions:—

	centim.
Extreme length	59
Length of tail (measured from sacro-iliac synchondrosis)	37·4
Length of humerus	4·1
Length of femur	5
Length of tarsus (terminal phalanx having disappeared)	6·1

Through the courtesy of Professor Flower I was enabled to measure the five specimens of this animal in the National Collection at South Kensington.

The four stuffed specimens varied in length from 68·7 cm. to 41·5 cm., the tarsus varying from 6·7 cm. to 3·9 cm.

The skin of the remaining specimen measured 67·6 cm. in length, the femur 5·6 cm., the humerus 4·7 cm., and the tarsus 5·9 cm.

Muscles of Anterior Extremity.

Rhomboideus.—Indivisible, arising from inner two thirds of occipital crest, from spines of cervical and first five dorsal vertebræ.

The anterior few fibres are inserted into base of spine, the rest by a broad muscular mass into base of scapula, being embraced in posterior half by serratus magnus.

Acromio-trachelien (omo-atlantic).—Arises by a flat tendon from anterior arch of atlas, and by a small accessory slip from basioccipital. The greater part of the muscle is inserted into dorsal third of spine of scapula, whilst a thin slip, leaving muscle in its lower third, crosses insertion of omohyoid, and is inserted into base of scapula in close connection with inner portion of serratus magnus.

Cleido-occipital.—Arises near middle of clavicle by muscular fibres, and is inserted into occipital crest internal to cleido-mastoid, its posterior fibres being continuous with trapezius for half an inch. Its anterior fibres are just united with cleido-mastoid at their insertion.

Cleido-mastoid.—Overlain by sterno-mastoid except just at its origin. Arises from front of clavicle at its sternal end by fleshy fibres. It forms a broad, flat muscle, inserted by a rounded mass into occiput between sterno-mastoid and digastric, and by coarse fasciculi into occipital crest for its outer half.

Sterno-mastoid.—Arises from front of manubrium sterni by tendinous and fleshy fibres, close to its fellow of opposite side. It forms a broad fleshy belly, inserted by a tendon into front of mastoid process just behind external auditory meatus. It is continuous just at its insertion with cleido-mastoid.

Trapezius.—This muscle was much damaged. It apparently arises from occipital protuberance, its anterior fibres being continuous with posterior fibres of cleido-occipital, from spines of cervical and dorsal vertebræ. Its anterior and middle fibres are inserted into whole length of spine of scapula, whilst its posterior ones pass forwards to be inserted into the spine at its dorsal part.

Latissimus dorsi.—Arises from spinous processes of dorsal vertebræ, and from lumbar fascia which attaches it to lumbar vertebræ and crest of ilium. Inserted by narrow tendon into inner lip of bicipital groove of humerus.

Dorsi epitrochlear.—A thin muscular slip arising from outer surface of latissimus dorsi by tendinous fibres, and inserted into fascia on inner side of arm which attaches it to olecranon.

Serratus magnus.—Arises by thirteen digitations from posterior six cervical transverse processes, closely connected with insertion of scalenus, and from outer surface of first seven ribs. The anterior fibres are inserted into inner lip of base of scapula, whilst the posterior digitations curve round to outer lip of base, embracing insertion of rhomboideus.

Subclavius.—Arises from cartilage of first rib and is inserted into posterior border of clavicle at its outer half, a few of its inner fibres being continuous with the following portion, which arises by muscular fibres from the posterior border of clavicle at its outer two thirds, and is inserted by thin tendinous fibres into anterior border of acromion.

Pectoralis major.— Consists of two portions :—*a*, a large triangular mass arising from whole length of sternum and ensiform appendix. Fibres converge to a tendon—the posterior ones underlying the anterior ones—which is ultimately united with tendons of chondro-humeral and pectoralis quartus and is inserted into outer lip of bicipital groove of humerus. Its anterior fibres are continuous for a short distance with clavicular portion of deltoid.

β. Underlies preceding portion. It arises in close connection with it from middle of sternum opposite third, fourth, and fifth ribs. Its fibres converge to a flat narrow tendon, which is inserted into outer lip of bicipital groove on a level with upper portion of preceding tendon.

Rectus sternalis.—Arises by three tendinous slips from junction of fourth, fifth, and sixth ribs with sternum. It is inserted into anterior surface of first rib at about its middle.

Pectoralis quartus.—Arises from fascia lying between scapula and pectoralis major. It is inserted into outer lip of bicipital groove of humerus with chondro-humeral.

Chondro-humeral.—A thin band arising in middle line from aponeurosis covering external oblique. Inserted with pectoralis quartus.

Supraspinatus.—Arises from supraspinous fossa, inserted into anterior part of neck of humerus, and shoulder capsule.

Infraspinatus.—Arises from infraspinous fossa. Inserted just below preceding.

Teres minor.—Arises from ventral half of posterior border of scapule between infraspinatus and scapular head of triceps. Inserted just below infraspinatus.

Teres major.—A thick fleshy muscle, arising from posterior superior angle of scapula. Inserted by a flattened tendon into inner lip of bicipital groove.

Deltoid.—Clavicular and scapular positions quite distinct, excepting just at their insertions.

Clavicular portion arises from anterior border of outer half of clavicle and from a small portion of acromion. Inserted into anterior surface of humerus at its upper third, being connected both at its origin and insertion with pectoralis major.

Scapular portion arises from posterior surface of spine of scapula and upper portion of infraspinous fossa. Inserted just above clavicular portion.

Coraco-brachialis (brevis).—Arises from coracoid, and is inserted into inner part of neck of humerus.

Subscapularis.—Arises from subscapular fossa. Inserted into inner part of humerus, near to neck.

Levator scapulæ.—Arises by a rounded tendon from anterior arch of atlas just internal to acromio-trachelien, and by a few fibres behind this. Its fibres, diverging, are inserted into ventral third of spine of scapula and acromion.

Biceps.—Arises by a flat undivided tendon from coracoid and upper margin of glenoid. It consists of two bellies, which are distinct, but closely applied, the coraco-radial one being superficial. If the tendon is forcibly torn, the coraco-radial head is seen to arise from both coracoid and glenoid, the gleno-ulnar arising from glenoid alone. The former is inserted into radial tubercle; the latter is inserted with brachialis anticus into coracoid process of ulna.

Triceps.—Arises by three heads. Long one arises from lower part of posterior border of scapula, by tendon in its lower two thirds, and in its upper third by muscular fibres, which pass obliquely on to outer aspect and are inserted into tendon. Inner and outer heads partly separated by musculo-spiral nerve, arising from inner and posterior aspects of humerus, and from intermuscular septum separating outer head from brachialis anticus. Fibres from outer head pass obliquely into long head at its lower third, and partly into outer side of olecranon. Most of fibres of inner head are inserted into anterior part of long head, a few being inserted into inner side of olecranon. Long head is inserted into tip of olecranon.

Anconeus internus.—Arises from back of internal condyle of humerus, and is inserted on inner side of tip of olecranon. Its upper fibres are continuous with inner head of triceps, being separated from it by ulnar nerve. Its lower fibres are separated from flexor carpi ulnaris by a fibrous septum.

Anconeus externus.—Arises from back of external condyle of humerus. Inserted into outer side of olecranon and outer side of ulna for its upper fifth. Its upper fibres are continuous with outer head of triceps.

Brachialis anticus.—Arises from outer side of humerus in its whole length. Inserted into ulna, just outside insertion of gleno-ulnar portion of biceps.

Palmaris longus.—Arises by fleshy fibres from internal condyle of humerus and lower part of supracondyloid ridge. Inserted into flexor tendon in palm. Two portions of it are quite distinct from main mass—one, which arises from internal condyle, and whose tendon underlies principal tendon, is inserted into the lower part of it; the other leaves the inner side of the muscle and is inserted into the inner side of its tendon.

Flexor carpi radialis.—A thin muscle arising from internal condyle of humerus. Inserted into radial side of base of metacarpal of medius.

Flexor carpi ulnaris.—Arises from internal condyle of humerus, from posterior surface of olecranon, and from bridge between the two, closely connected with anconeus internus. Its superficial fibres form a thin belly inserted by a very thin tendon into base of metacarpal of minimus; the remainder forms a strong tendon inserted into pisiform.

Flexor digitorum profundus.—Consists of three parts all closely connected.

Condylar portion, superficial, arising from internal condyle of humerus, closely connected with flexor carpi ulnaris.

Ulnar portion, the largest, arising from upper third of ulna and outer surface of olecranon.

Radial portion arises from upper third of radius, internal to oblique line.

Tendon grooved, tendon of palmaris longus first lying in it, and then inserted into it. Common tendon divides into five, which are inserted into bases of terminal phalanges of fingers.

Lumbricales three in number:—1. Arising from second and third flexor tendons, inserted into outer side of medius. 2. Arising from third and fourth flexor tendons, inserted into outer side of annularis. 3. Arising from ulnar side of fourth tendon, inserted into outer side of minimus.

Flexor digitorum sublimis.—Arises from lower third of flexor profundus as a small muscular belly. It gives off three tendons, each of which splits opposite first inter-phalangeal joint, and allows tendon of deep flexor to pass through. The split tendons then rejoin, and are inserted into upper third of second phalanges of index, medius, and annularis.

Pronator radii teres.—Arises from internal condyle of humerus, and is inserted into outer border of radius at its middle third.

Pronator quadratus consists of thin fibres extending between anterior surfaces of radius and ulna in their lower half.

Supinator longus.—A well-developed muscle, arising from upper part of external supracondyloid ridge of humerus, anterior to extensor carpi radialis longior, with which it is closely united at its origin. At its lower third it ends in a thin tendon, which, becoming closely applied to external lateral ligament, is inserted into dorsal and outer surfaces of wrist.

Extensor carpi radialis longior.—Arises from external supracondyloid ridge of humerus and external condyle, being united with following muscle for about an inch. Tendon inserted into outer side of metacarpal of index at its proximal third.

Extensor carpi radialis brevior.—Arises in close connection with preceding muscle, inserted into outer side of metacarpal of medius at its proximal third.

Extensor digitorum communis.—A somewhat small muscle, arising from external condyle of humerus in common with extensor minimi digiti. Tendon divides into three—one passing to dorsum of index, another dividing and passing to medius, whilst the third one divides, one division passing to annularis whilst the other passes to minimus.

Extensor minimi digiti.—Thin, arising from external condyle of humerus with common extensor. Its tendon divides into two, which are inserted on ulnar sides of tendons from common extensor passing to annularis and minimus.

Extensor carpi ulnaris.—Arises from outer condyle of humerus, inserted into inner side of wrist.

Extensor secundi internodii pollicis.—Arises from inner side of olecranon, and inner side of upper fourth of posterior surface of ulna. Its tendon divides into two slips—one being inserted into base of first phalanx of thumb, the other into base of first phalanx of index, on radial side of common extensor.

Extensor ossis metacarpi pollicis.—Arises from extensor surface of ulna in its upper half and from upper third of radius. Tendon inserted into base of metacarpal of thumb on its outer side.

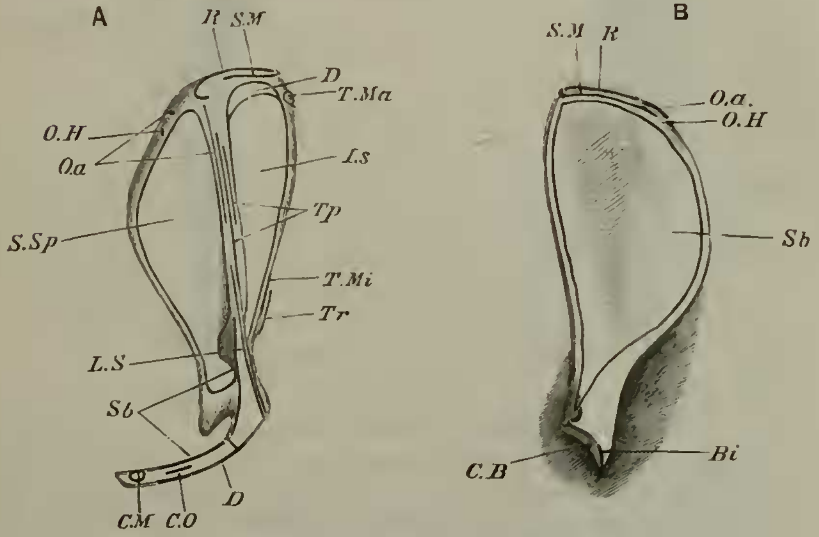
Supinator brevis.—Arises from external condyle of humerus. Its upper fibres pass in a sling-like manner round head of radius, whilst its lower fibres pass obliquely downwards and inwards and are inserted into surface of radius external to its oblique line.

Muscles of Hand.

Dorsal group.—Abductor pollicis.—Arising from annular ligament, trapezium, and scaphoid, slightly united at its origin with flexor brevis pollicis; inserted into outer side of base of first phalanx of thumb.

Abductor minimi digiti.—Much larger than preceding, arising by two heads from annular ligament and pisiform. Inserted into base of first phalanx of minimus.

Fig. 1.



Myology of Water-Opossum.

R., rhomboideus; *S.M.*, serratus magnus; *D.*, deltoid; *T.Ma.*, teres major; *O.H.*, omo-hyoid; *O.a.*, omo-atlantic; *S.Sp.*, supra-spinatus; *I.s.*, infraspinatus; *Tp.*, trapezius; *T.Mi.*, teres minor; *Tr.*, triceps; *L.S.*, levator scapulæ; *Sb.*, subclavius; *C.M.*, cleido-mastoid; *C.O.*, cleido-occipital; *C.B.*, coraco-brachialis; *Bi.*, biceps.

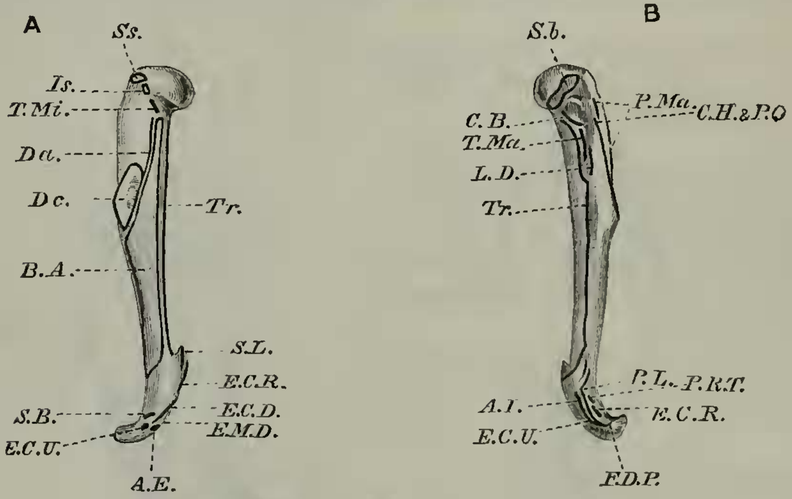
First dorsal interosseous.—Arises from palmar surface of metacarpal of thumb. Inserted into radial side of first phalanx of index.

Second dorsal interosseous.—Arises from radial side of base of metacarpal of medius, and ulnar side of metacarpal of index in its whole length. Arched tendon, the larger end being inserted into radial side of base of first phalanx of medius, and the smaller end passing on to palmar surface of metacarpal of index.

Third dorsal interosseous.—Arises from radial side of metacarpal of medius in its proximal half, and dorsal surface of metacarpal of annularis in its proximal third. Similar arched tendon, the larger and thicker portion passing to base of first phalanx of medius, whilst thinner portion passes on to palmar surface of metacarpal of annularis.

Fourth dorsal interosseous.—Arises from dorsal surface of metacarpal of annularis and radial side of metacarpal of minimus. Inserted into palmar surface of heads of metacarpals.

Fig. 2.



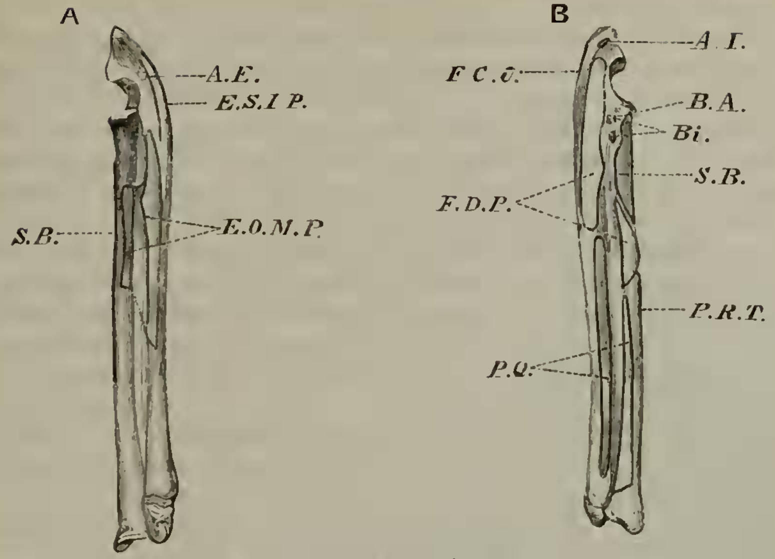
Myology of Water-Opossum.

Ss., supraspinatus; *Is.*, infraspinatus; *T.Mi.*, teres minor; *Da.*, deltoid, acromial part; *Dc.*, deltoid, clavicular part; *B.A.*, brachialis anticus; *S.L.*, supinator longus; *E.C.R.*, extensor carpi radialis longior et brevior; *E.C.D.*, extensor communis digitorum; *E.M.D.*, extensor minimi digiti; *S.B.*, supinator brevis; *E.C.U.*, extensor carpi ulnaris; *A.E.*, anconeus externus; *Tr.*, triceps; *Sb.*, subscapularis; *P.Ma.*, pectoralis major; *C.B.*, coraco-brachialis; *T.Ma.*, teres major; *C.H.*, chondro-humeral; *P.Q.*, pectoralis quartus; *L.D.*, latissimus dorsi; *Tr.*, triceps; *P.L.*, palmaris longus; *P.R.T.*, pronator radii teres; *A.I.*, anconeus internus; *E.C.U.*, extensor carpi ulnaris; *F.D.P.*, flexor digitorum profundus.

Palmar group.—Five in number and have a common origin in palm. The first three pass to radial side of first phalanges of thumb, index, and medius, whilst the other two pass to the ulnar side of the remaining fingers.

Intermediate group.—Each finger is provided with a short flexor, each of them consisting of two bellies more or less united and inserted at each side of their respective phalanx, with the exception of the flexor brevis medii, which is single and is inserted into tendon of third dorsal interosseous.

Fig. 3.



Myology of Water-Opossum,

A.E., anconeus externus; *E.S.I.P.*, extensor secundi internodii pollicis; *E.O.M.P.*, extensor ossis metacarpi pollicis; *S.B.*, supinator brevis; *A.I.*, anconeus internus; *F.C.U.*, flexor carpi ulnaris; *B.A.*, brachialis anticus; *Bi.*, biceps; *S.B.*, supinator brevis; *F.D.P.*, flexor digitorum profundus; *P.R.T.*, pronator radii teres; *P.Q.*, pronator quadratus.

Muscles of Posterior Extremity.

Gluteus maximus.—A thin triangular muscle, arising chiefly by fascia from anterior superior spine of ilium, from transverse processes of sacral vertebræ, and from caudal vertebræ as far as third or fourth. Anterior and middle fibres converge to be inserted into outer aspect of root of great trochanter; posterior fibres inserted into linea aspera for its upper two thirds. It is quite free posteriorly, but in front turns round gluteus medius and joins anterior border of gluteus minimus.

Gluteus medius.—Thin posteriorly, but thick and partly divisible into three laminæ anteriorly. Arises from dorsum ilii, anterior superior iliac spine, and sacral vertebræ, continuous anteriorly with gluteus maximus. Its superficial part is inserted into outer surface, its deep part into upper border of great trochanter.

Gluteus minimus.—Thin, arising from border of ilium between iliacus and gluteus medius. Inserted into anterior border of great trochanter, being continuous both at its origin and insertion with gluteus maximus.

Gluteus quartus.—Thin muscular fibres, closely applied to capsule of hip-joint, arising superficial to rectus tendon and closely connected with it. It is inserted just below inner part of neck of femur between psoas and vastus internus.

Pyriformis.—Arises from side of sacrum half an inch behind sacro-iliac synchondrosis. It is inserted by a narrow tendon into summit of great trochanter.

Obturator externus.—Arises from margin of obturator foramen and membrane; inserted by a flattened tendon into digital fossa with obturator internus.

Obturator internus.—Arises from descending ramus of pubes and a small portion of ascending ramus of ischium. Tendon plays over small sciatic notch and is inserted into digital fossa with obturator externus.

Gemellus superior consists of two distinct parts. The first arises from ascending ramus of ischium in front of groove for tendon of obturator internus. The second portion lies behind this and is slightly overlapped by it. Both portions are inserted into tendon of obturator internus and into surface of bone just above it by tendinous fibres.

Gemellus inferior.—Arises from ascending ramus of ischium under cover of gemellus inferior and obturator internus. Inserted into digital fossa below tendon of obturator internus.

Biceps.—Coarsely fasciculated; arises from tuberosity of ischium; inserted into fascia on outer side of leg for its upper third.

Semitendinosus.—Arises from ischial tuberosity partly under cover of biceps and closely connected with it. An inch below its origin it receives caudal portion, which is ribbon-shaped and arises from transverse processes of second and third caudal vertebræ. At the junction of the two portions there is a tendinous intersection. It is inserted into inner surface of tibia under cover of gracilis, its lower part being closely connected with the insertion of that muscle. Its most superficial fibres are inserted into fascia on outer side of leg just below insertion of biceps.

Semimembranosus.—Arises from descending ramus of pubes and ascending ramus of ischium, extending between origins of gracilis and semitendinosus. It is inserted into inner side of head and adjacent part of tibia for two fifths of an inch.

Sartorius.—Arises from anterior superior spine of ilium and by a linear origin for a quarter of an inch below. It is inserted by tendon into expansion of triceps covering patella.

Triceps extensor.—Rectus femoris arises from dorsal part of acetabulum by a strong rounded tendon and by tendinous fibres above and below. Vastus externus and internus form a large fleshy mass arising from inner, anterior, and outer surfaces of femur. The former joins rectus for about a quarter of an inch and is inserted into front of knee, whilst vastus internus is inserted into fascia on inner side of knee.

Subcrureus.—A flat band arising from front of lower part of shaft of femur at its inner part. Inserted into inner surface of common tendon.

Psoas magnus.—A small thin muscle arising from last lumbar vertebra and anterior part of sacrum. It joins with iliacus at level of middle of sacrum, and is inserted by thin tendinous fibres into femur just below lesser trochanter.

Psoas parvus.—Very large, arising from sides of bodies of last three dorsal and first two lumbar vertebræ by tendinous fibres, and fronts of next four vertebræ by fleshy fibres. It is inserted by a narrow tendon into ilio-pectineal line just outside marsupial bone.

Iliacus.—Arises from iliac fossa. Inserted by muscular and tendinous fibres into lesser trochanter of femur and into surface of bone beneath it, its lower fibres being closely connected with tendon of psoas.

Gracilis.—Arises from lower two thirds of pubic symphysis and from a small portion of its descending ramus. It is inserted into inner surface of tibia by strong fibres at its upper part, and by a fascia closely united to lower part of insertion of semitendinosus below this.

Pectineus consists of two small flat slips united at their origin :—1. Arises from outer angle of base of marsupial bone by a narrow tendon. 2. Arises from pubes between former slip and insertion of psoas parvus. They are inserted into upper half of linea aspera superficial to adductor brevis, a narrow space existing between their insertions.

Adductor brevis.—Arises from a small portion of pubic symphysis, ascending ramus of pubes, and inner part of marsupial bone. It is inserted into middle lip of linea aspera for its upper half.

Adductor magnus.—Extensive origin from lower part of pubic symphysis, rami of pubes and ischium, and ischial tuberosity under cover of gracilis, semimembranosus, and semitendinosus. Its fibres converge and are inserted into triangular surface at lower third of linea aspera. The muscle has the appearance of being enfolded on itself, the fibres from the symphysis pubis and upper part of ramus forming a thin strap-like band which crosses the other fibres obliquely.

Adductor longus.—Arises from pubic symphysis between origins of adductors brevis and magnus. It is inserted into lower half of linea aspera and inner condyle.

Quadratus femoris.—Arises from ischial tuberosity. Inserted tween greater and lesser trochanters of femur.

Gastrocnemius internus.—Arises from posterior part of inner condyle of femur. Its tendon is grooved on its deep aspect and embraces tendon of gastrocnemius externus. It is inserted on outer side of posterior surface of os calcis.

Gastrocnemius externus.—Much larger than preceding muscle. It arises from external condyle of femur, receiving a band of fibres which arises from the sesamoid bone, which articulates with the head of the fibula. It forms a thick belly, which is partially separable into two parts, and is inserted into os calcis on inner side of gastrocnemius internus.

Plantaris.—Arises in close connection with gastrocnemius externus from sesamoid bone, passes under gastrocnemei, and is inserted into fascia on inner side of foot.

Popliteus.—Arises by narrow tendon from external condyle of femur. Inserted into posterior surface of tibia at its upper half.

Tibialis posticus.—Arises from inner part of posterior surface of shaft of fibula in its upper fifth, passes behind inner malleolus, and is inserted into inner and under surfaces of astragalus.

Flexor longus digitorum.—Arises from inner border of posterior surface of fibula at its upper third and from interosseous membrane. Tendon joins inner border of tendon of flexor longus pollicis.

Flexor longus pollicis.—Arises from whole of inner and posterior surfaces of fibula. The muscle is easily separable into two parts, the deep portion joining the tendon of the superficial in its lower fifth. The tendon divides into five slips, one of which passes to each of the toes. The tendon to the hallux comes off from the superficial part, and some of its fibres are directly continuous with those of the flexor longus digitorum. Four lumbricales are present, arising from single tendons and passing to tibial side of corresponding toe. The outer one is larger than the others.

Accessorius —Arises from a ridge at outer border of lower surface of os calcis. It passes inwards and slightly forwards, and is chiefly inserted into tendon of flexor longus pollicis.

Tibialis anticus.—A large muscle, arising from upper two fifths of outer surface of shaft of tibia. It is inserted into inner side of internal cuneiform.

Extensor longus digitorum.—A small muscular belly, arising from inner side of ridge on anterior border of head of fibula. It divides into two tendons. Inner one again divides into three, which are inserted by two slips into bases of first phalanges of index, medius, and annularis. Outer tendon is similarly inserted into minimus. Tendon to annularis is connected by vinculæ to adjoining tendons.

Extensor longus pollicis.—Arises from upper half of shaft of fibula on its anterior aspect; passes obliquely to inner side of foot, and is inserted at base of first phalanx of great toe.

Peroneus longus arises by two heads:—1. From posterior part of head of fibula and sesamoid bone. 2. From outer part of prominent ridge on anterior border of fibula, and septum between it and peroneus brevis. Peroneus quinti digiti lies between its two heads. Its tendon passes behind external malleolus into sole of foot, and is inserted into outer angle of metacarpal of great toe.

Peroneus brevis.—Arises from anterior border of fibula just below prominent ridge and septa between it and peroneus longus and extensor longus digitorum. It is inserted into outer side of base of metacarpal of minimus.

Peroneus quinti digiti.—Arises from external condyle of femur and external lateral ligament. Its long tendon passes behind external malleolus to be inserted into outer side of first phalanx of minimus.

Peroneus quarti digiti.—Arises from upper third of anterior surface of fibula with exception of a small interval at top.

Peroneus tertii digiti.—A very slender muscular belly, arising from outer side of fibula just below outer head of peroneus longus. Of the arrangement of these last two muscles I am not certain. The former seemed in right foot to divide and to pass to outer sides of fourth and fifth toes, but in left foot I easily traced it to outer side of first phalanx of fourth toe. The latter muscle had an exceedingly slender tendon, which I traced in the right foot to the outer side of the third toe, but in the left foot I could not trace it beyond the fascia of the ankle. All the peronei tendons pass behind the malleolus.

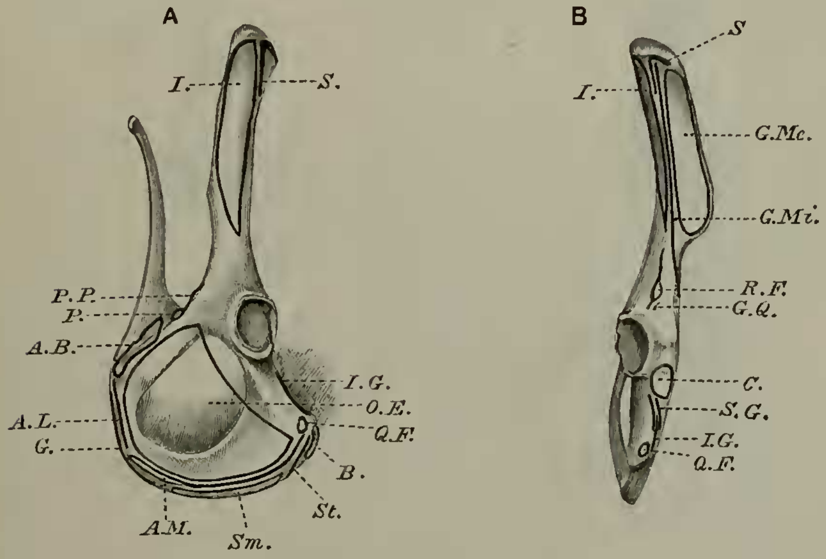
Extensor brevis digitorum.—Arises from outer side of ankle and apex of fibula. It divides into two (?) tendons, which pass to inner toes and form a tendinous expansion at metacarpo-phalangeal joint with tendon of long extensor.

Muscles of Foot.

Dorsal Layer.—*Abductor minimi digiti* consists of two parts—one arising from under surface of os calcis, the other from annular ligament; both are inserted into outer side of base of first phalanx of minimus.

Abductor ossis metatarsi minimi digiti.—Arises from under surface of os calcis external to above. Inserted into outer side of base of metatarsal of minimus internal to insertion of peroneus brevis.

Fig. 4.



Myology of Water-Opossum.

I., iliacus; *S.*, sartorius; *P.P.*, psoas parvus; *P.*, pectineus; *A.B.*, adductor brevis; *A.L.*, adductor longus; *G.*, gracilis; *A.M.*, adductor magnus; *S.m.*, semimembranosus; *St.*, semitendinosus; *B.*, biceps; *Q.F.*, quadratus femoris; *O.E.*, obturator externus; *I.G.*, inferior gemellus; *G.Mc.*, gluteus medius; *G.Mi.*, gluteus minimus; *G.Q.*, gluteus quartus; *R.F.*, rectus femoris; *C.*, coccygeus; *S.G.*, superior gemellus.

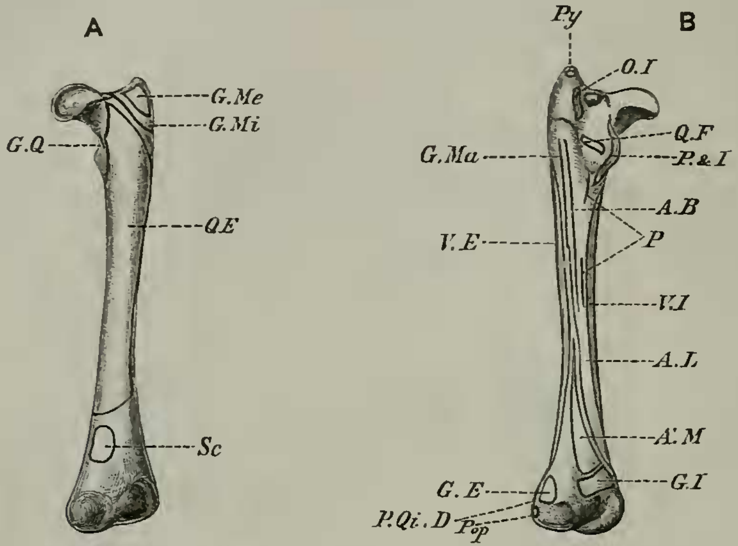
Abductor annularis.—Arises from base of metatarsal of minimus, cuboid, and sheath of peroneus longus; inserted into outer side of base of first phalanx of annularis.

Abductor indicis, from outer side of base of metatarsal of great toe to inner side of first phalanx of index.

Abductor pollicis.—Large, arising from tuberosity of scaphoid; inserted into inner side of first phalanx of pollex.

Intermediate layer.—Each consists of two bellies, which are more or less connected and inserted into bases of first phalanges.

Fig. 5.



Myology of Water-Opossum.

G.Me., gluteus medius; *G.Mi.*, gluteus minimus; *G.Q.*, gluteus quartus; *Q.E.*, quadriceps extensor; *Sc.*, subcrureus; *Py.*, pyriformis; *O I.*, obturator internus; *Q.F.*, quadratus femoris; *P. & I.*, psoas and iliacus; *G.Ma.*, gluteus magnus; *A.B.*, adductor brevis; *P.*, pectineus; *V.E.*, vastus externus; *V.I.*, vastus internus; *A.L.*, adductor longus; *A.M.*, adductor magnus; *G.I.*, gastrocnemius internus; *G.E.*, gastrocnemius externus; *P.Qi.D.*, peroneus quinti digiti; *Pop.*, popliteus.

Flexor brevis minimi digiti.—Large, arising from base of metacarpal of minimus.

Flexor brevis annularis,—Arises from ridge on cuboid by a narrow tendon.

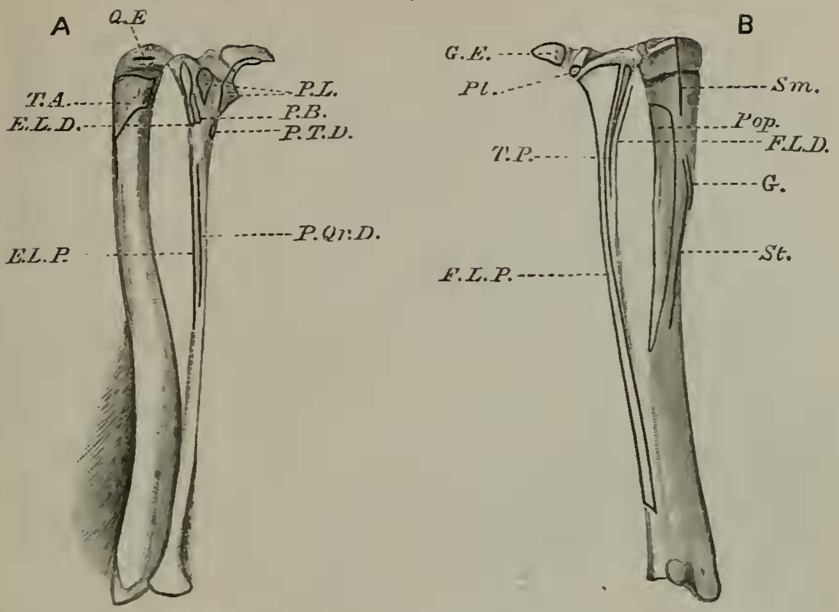
Flexor medii.—Inner part is connected with flexor indicis.

Fexor indicis.—Arises from cuneiform bones.

Flexor pollicis.—Arises from scaphoid.

Plantar Layer.—All arise from common tendon in sole. The muscles to pollex and minimus are large, the others being very small slips. The slips to pollex and index pass to outer side of phalanges. The slip to the minimus passes to the inner side; whilst the annularis has two slips—one passing to the inner side, and the other dividing, the greater part passing to outer side, whilst a small portion goes to inner side. There is also a flexor brevis digitorum which arises from os calcis.

Fig. 6.



Myology of Water-Opossum.

Q.E., quadriceps extensor; *T.A.*, tibialis anticus; *E.L.D.*, extensor longus digitorum; *E.L.P.*, extensor longus pollicis; *P.L.*, peroneus longus; *P.B.*, peroneus brevis; *P.T.D.*, peroneus tertii digiti; *P.Qr.D.*, peroneus quarti digiti; *G.E.*, gastrocnemius externus; *Pl.*, plantaris; *T.P.*, tibialis posticus; *F.L.P.*, flexor longus pollicis; *Sm.*, semimembranosus; *Pop.*, popliteus; *F.L.D.*, flexor longus digitorum; *G.*, gracilis; *St.*, semitendinosus.

Muscles of Head and Neck.

Masseter.—Enormously developed. Can be easily separated into several strata. The most superficial fibres arise from the strong masseteric fascia, and, passing inwards and backwards, are inserted into incurved portion of lower jaw.

The next fibres, which also pass backwards, arise from lower border of zygoma, and are inserted into a ridge, extending from condyle of lower jaw along lower border of outer surface. The most internal part arises from lower border and inner surface of zygoma, and its fibres, passing downwards and slightly forwards for the most part (the most anterior fibres passing slightly backwards), are inserted into outer surface of ramus between oblique line and dental foramen. The most posterior fibres of the superficial portion of the muscle are inserted into a tendinous raphe behind the ramus, which receives the most posterior fibres of internal pterygoid on its inner surface.

Temporal.—Consists of two easily separable laminæ. Superficial portion, thin in its posterior two thirds, arises from posterior part of inner surface of zygoma inseparable from masseter, and from a small portion of upper border of zygoma at its posterior part. These fibres chiefly converge to the anterior inferior angle of the muscle and form a large fleshy mass, which is inserted into anterior border and outer surface of coronoid process, whilst the posterior few fibres are inserted into outer surface of coronoid. The much larger deep part is separated from it by tendinous fibres. It arises from the whole of the temporal fossa and posterior part of inner surface of zygoma. It is inserted into inner surface and upper border of coronoid.

Internal pterygoid.—Arises from outer surface of pterygoid. Its fibres passing outwards, backwards, and slightly downwards, are inserted into border of incurved portion of lower jaw, its posterior fibres meeting those of masseter as described above.

External pterygoid.—A small roundish muscle, arising from pterygoid at upper and posterior part of internal pterygoid. Its fibres pass downwards and backwards, and are inserted into base of condyle of jaw.

Sterno-hyoid.—Long, ribbon-shaped, arising from inner surface of second piece of sternum ; inserted into front of hyoid.

Sterno-thyroid.—Smaller than preceding and overlain by it. Arises with sterno-hyoid, and is united with it for a short distance. United above with its fellow, and inserted with it into front of thyroid.

Thyroid hyoid.—Passes from side of thyroid to great cornu of hyoid.

Omo-hyoid.—A long narrow band arising from vertebral border of scapula. Inserted into hyoid, just external to sterno-hyoid. No tendinous intersection could be seen.

Mylo-hyoid.—Flat and thin, arising from posterior half of mylohyoid ridge of lower jaw. Inserted into median raphe, and its posterior fibres into tendinous expansion of posterior belly of digastric.

Genio-hyoid.—Narrow origin by tendinous fibres from inner border of lower jaw close to symphysis. It lies close to its fellow, and is inserted into front of hyoid. It sends a small muscular fasciculus to genio-hyoglossus.

Hyoglossus.—A large muscle extending from side of hyoid under cover of genio-hyoid. Its fibres pass forwards and inwards to be inserted into side of tongue for its posterior two thirds.

Genio-hyoglossus.—Arises from inner side of lower jaw close to middle line. Its fibres arch back to be inserted into posterior half of under surface of tongue and lower border of internal surface of hyoid, to which it is connected by tendinous fibres.

Digastric.—Posterior belly arises by a rounded tendon from paroccipital process. It forms a rounded belly which flattens out, forming a tendinous expansion which meets its fellow in middle line. Anterior belly arises from superficial aspect of this expansion, and forming a flat muscle, is inserted into lower border of lower jaw at its middle.

Paroecipito-hyoid.—A narrow band of fibres passing from paroccipital process, just internal to origin of posterior belly of digastric, to great cornu of hyoid.

A thin sheet of muscular fibres passes from basioccipital to great cornu of hyoid and pharynx, and a deeper set pass to side of tongue, side of hyoid, and pharynx.

Constrictor muscles form one sheet.

Scalenus posticus.—Arises by muscular fibres from third rib, interdigitating with serratus magnus. It passes forwards to be inserted by a small tendon into second cervical transverse process. It is closely connected with following muscle.

Scalenus anticus.—Arises from upper surface of first rib and is inserted by small tendons into second to sixth cervical transverse processes.

Trachelo-mastoid.—Arises from all cervical transverse processes; inserted into mastoid just behind cleido-mastoid. Tendinous intersection at its anterior fourth.

Complexus.—Arises from transverse processes as low as fourth dorsal; inserted into occiput. Tendinous intersection at its middle.

Splenius.—Arises from spinous processes of all cervical and first two dorsal vertebræ. Inserted into occipital crest and mastoid process under cover of trapezius and cleido-occipital. Its posterior fibres are continuous with serratus posticus superior.

Muscles of Trunk.

External oblique.—Arises by fleshy digitations from outer surfaces of third to thirteenth rib. Inserted into linea alba, tips and outer border of marsupial bone, and tendon, extending from anterior superior iliac spine to pubes just behind origin of pectineus.

Internal oblique.—Very thin ventrally, thicker dorsally. Arises from lumbar fascia and anterior part of iliac crest. Inserted into lower few ribs, becoming merged with lower intercostals, and into outer border of marsupial bone. Tendinous intersections continue the lower two ribs in this muscle for a short distance.

Transversalis.—Consists of very thin fibres. Separated from last muscle by intercostal nerves.

Pyramidalis.—Completely overlies rectus abdominis. Arises from inner border of marsupial bone by muscular fibres, and by tendinous fibres from its tip. The posterior fibres pass transversely inwards to linea alba, the upper fibres obliquely forwards, and those from tip of marsupial bone directly forwards to blend with rectus.

Rectus abdominis.—Arises from inner border of marsupial bone. Fibres pass directly forwards and are inserted into first rib close to sternum, and to sternum in first intercostal space. Only one intersection was noticed situated at level of ensiform appendix.

Serratus posticus superior.—Arises by fascia from all dorsal spinous processes excepting the last one. Inserted into third to twelfth ribs. Its anterior fibres are connected with splenius.

Serratus posticus inferior.—Arises by tendinous fibres from eleventh to thirteenth dorsal vertebræ and from lumbar vertebræ behind this. Inserted into tenth to thirteenth ribs. Its fibres overlie serratus superior and are continuous behind with internal oblique.

Triangularis sterni.—Extends from upper border of third piece of sternum to lower border of ensiform appendix, and is inserted into second to fifth ribs and upper border of sixth.

Coccygeus.—Arises from spine of ischium and surrounding portion of bone by tendinous fibres. It spreads out in a fan-like manner, and is inserted into transverse processes of 1–6 caudal vertebræ and into fascia behind this.

Agitator caudæ.—Arises from posterior margin of outer surface of iliac crest, and from fascia overlying elevator caudæ, which attaches it to the last few sacral vertebræ. It is attached to transverse processes of first ten caudal vertebræ.

Extensor caudæ.—A thick fleshy mass arising as far forwards as first lumbar vertebra. It divides into numerous fleshy bellies which overlie one another, and whose tendons pass to caudal vertebræ at a very variable distance.

Depressor caudæ.—A thick fleshy mass arising from front of sacrum and brim of pelvis, and from tendon of psoas parvus by a few fibres.

3. Description of a new Species of Frog from Asia Minor.

By G. A. Boulenger, F.Z.S.

[Received November 21, 1884.]

(Plate III.)

A new species of *Rana*, belonging to the section *Ranæ temporariæ*, was discovered at Brusa by Baron von Maltzan, and a male specimen obtained for the Natural-History Museum through Dr. Aug. Müller of Frankfort. Its nearest ally is *Rana temporaria* (*R. fusca terrestris* of Rösel), from which it differs in the longer hind limbs, which equal those of *R. agilis*, the narrower interorbital space, the longer inner metatarsal tubercle, and also in a few points of minor importance. This Frog I propose to name

Rana macrocnemis, sp. n. (Plate III.)

Head broader than long; snout short, obtuse; loreal region not very oblique; nostril equally distant from the eye and the end of the snout; interorbital space flat, half the width of the upper eyelid; tympanum two thirds the diameter of the eye; the distance separating the eye from the tympanum equals nearly half the diameter of the latter. First finger longer than second, with strong swelling (♂) showing no trace of transverse division. Hind limb very long, the tibio-tarsal articulation reaching beyond the tip of the snout; tibia as long as the fore limb; toes three fourths webbed, with extremely small subarticular tubercles; inner metatarsal tubercle obtuse, elliptical, a